

Remarks

Claims 1-43 are pending in this application. Claims 1-43 stand rejected.

Claims 1, 7, 10, 12, 13, 14, 15, 25, 36, 39 and 43 have been objected to or rejected under 35 U.S.C. §112. Claims 1, 7, 10, 12, 13, 14, 15, 25, 36, 39 and 43 have been amended to respond solely to the Examiner's objections and rejections based upon 35 U.S.C. §112 for purposes of clarification, correction of typographical errors, providing missing or corrected antecedent basis, etc., without modifying in any way the substance of the scope of the claimed invention(s).

Regarding claim 1, subparagraph B), applicants disagree that "when operating" is an intended use recitation and not a positive limitation. The recitation describes a condition of operation of the claimed invention, i.e., that the "tangential fan ... produc[es] sufficient gas velocity ... to clear from said discharge region ... substantially all discharge produced ions prior to a next laser light pulse when operating at a repetition rate in the range of 4,000 laser light pulses per second or greater." Applicants assert that this is a positive recitation and not just an intended use and respectfully request that the Examiner withdraw the rejection of claim 1 on this basis and allow claim 1.

The Examiner's objections and rejections of these claims 1, 7, 10, 12, 13, 14, 15, 25, 36, 39 and 43 should no longer be founded and the Examiner is respectfully requested to withdraw the objections to or rejections of claims 1, 7, 10, 12, 13, 14, 15, 25, 36, 39 and 43 and to allow claims 1, 7, 10, 12, 13, 14, 15, 25, 36, 39 and 43.

Claims 1, 3, 5, 6 and 10-21 have been rejected for non-statutory "obviousness type" double patenting over respectively, claim 1, claim 11, claim 2, claim 1 and claims 16-27 in United States Patent No. 6,477,193, entitled EXTREME REPETITION RATE GAS DISCHARGE LASER WITH IMPROVED BLOWER MOTOR, issued to Oliver, et al. on November 5, 2002, and assigned to the common assignee of the above captioned application ("Oliver"). In this regard, with respect to claim 1 of the above captioned application the Examiner has referenced claims 1 and 6 of Oliver, with regard to claim 3, claim 11 of Oliver, with regard to claim 5, claim 2 of Oliver and with regard to claims 10-21, claims 16-27 of Oliver.

Applicants respectfully traverse the Examiner's obviousness type double patenting rejection. Claim 1 of the above captioned application, as currently amended, contains an important recitation not found in Oliver, i.e., in sub-paragraph A), "a first electrode support defining a discharge region having a gas flow path with a gradually increasing cross section downstream of said first and second electrodes to permit recovery of a large percentage of the static pressure drop in the discharge region" applicants assert that this structure is not taught or suggested from the embodiment claimed in Oliver.

For the above stated reasons applicants assert that the Examiner's rejection of claims 1, 3, 5, 6 and 10-21 are not proper and applicants respectfully request the Examiner to withdraw the rejection of claims 1, 3, 5, 6 and 10-21 and allow claims 1, 3, 5, 6 and 10-21.

Claim 41 has been amended to more correctly recite what the beam splitter splits off, without in any way changing the substance or scope of the claim.

Claims 1-3, 5, 10-31 and 41 stand rejected as unpatentable under 35 U.S.C. §103 (a) over United States Patent No. 5,771,258, entitled AERODYNAMIC CHAMBER DESIGN FOR HIGH PULSE REPETITION RATE EXCIMER LASERS, issued to Morton , et al. on June 23, 1998, and assigned to the common assignee of the present application, and which is a continuation in part of Application Ser. No. ("Morton") in view of United States Patent No. 6,243,405, entitled VERY STABLE EXCIMER OR MOLECULAR FLUORINE LASER, issued to Borneis, et al. on June 5, 2001 ("Borneis").

The Examiner has taken the position that:

Morton et al. teach in Figure 3 a gas discharge laser system comprising a laser chamber, two electrodes, a discharge region (112), a gas flow path, a tangential fan (138), a heat exchanger (154), and a pulse power system (which is not shown). Morton et al. do not teach a laser beam measurement and control system. Borneis et al teach in Figure 1 and in column 7, lines 13-36 a beam measurement and control system (18). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a beam measurement and control system in Morton et al., as taught by Borneis et al., to see if the wavelength and/or bandwidth need adjusting.

Morton et al. teaches:

In the preferred embodiment of the invention, vane 150 [shown in Prior Art Fig. 1] is replaced with an exit vane 311 which is mounted between anode 110 and support 309. Vane 311, in conjunction with insulator 307, provides a gradual change in flow cross-section. This graduated change reduces the collapse of flow velocity, thus minimizing turbulence in the region outside of discharge region 112. Furthermore, the smooth arc of vane 311 aids in directing the heated gas towards heat exchanger 154. (Col. 6, lines 22-29)

and

FIG. 8 is an illustration of an alternate embodiment of the invention. In this embodiment exit vane 311 has been replaced with an exit vane 801. Although the purpose of vane 801 is the same, it extends further towards the chamber housing before extending downwardly towards heat exchanger 154. (Col. 6, line 66 – Col. 7, line 4)

The present invention, among other things, involves:

FIG. 4B is a cross section drawing of a laser chamber 10A of a first preferred embodiment of the present invention. The principal chamber components are housing structure members 12A and 14A, cathode 18A and anode 20A downstream preionizer tube 60, peaking capacitor bank 62 and electrostatic trap unit 64 (all of which are similar to the prior art corresponding components shown in FIG. 1). The chamber includes a new anode support flow shaping structure 48, a new upper flow shaping structure 50, gas turning vanes 52, a new 5 inch diameter tangential type fan blade structure 46A and four water cooled heat exchanger units 58A. (pp. 7, line 24 – 31)

Claim 1 has been amended to more particularly point out and distinctly define the “gas flow path with a gradually increasing cross section downstream of said electrodes” as originally filed to clarify that downstream of the electrodes the gradually increasing cross section is formed by at least a support of at least one of the electrodes.

Even assuming that Borneis discloses a laser beam measurement and control system, as the Examiner has asserted and/or that the Examiner has met the burden under to *In*

re Lee, 277 F.3d 1338, 61 U.S.P.Q.2d 1430 (Fed. Cir. 2002) and/or *In re Thrift*, 298 F.3d 1357, 63 U.S.P.Q.2d 2002 (Fed. Cir. 2002), which applicants do not concede, there is no *prima facie* case of obviousness.

Whether or not the Examiner has established *prima facie* obviousness allocates the burden of going forward with the evidence during the examination process.¹ Initially the burden of going forward is on the Examiner to establish *prima facie* obviousness otherwise the applicant has no obligation to submit evidence of nonobviousness.² When and if the Examiner does establish *prima facie* obviousness, the burden of going forward with evidence or arguments shifts to the applicant.³

For *prima facie* obviousness all of the claim limitations must be taught or suggested by the prior art.⁴ If an independent claim is nonobvious any claim depending from the independent claim is also nonobvious.⁵

For the above stated reasons the Examiner's rejection of claim 1 is not proper and the applicants respectfully request that the Examiner withdraw the rejection of claim 1 and allow claim 1.

With respect to claim 2, the Examiner has taken the position that the optimum value of the downstream cross section involves routine skill in the art.

Even assuming that the Examiner's position is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claim 2 is at least allowable as depending from allowable claim 1.

For the above stated reasons the Examiner's rejection of claim 2 is improper and applicants respectfully request that the Examiner withdraw the rejection of claim 2 and allow claim 2.

¹ M.P.E.P. §2142. See *In re Rinehart*, 531 F.2d 1048, 189 U.S.P.Q. 143 (C.C.P.A. 1976); *In re Linter*, 458 F.2d 1013, 173 U.S.P.Q. 560 (C.C.P.A. 1972); *In re Saunders*, 444 F.2d 599, 170 U.S.P.Q. 213 (C.C.P.A. 1971); *In re Tiffin*, 443 F.2d 394, 170 U.S.P.Q. 88 (C.C.P.A. 1971), *amended*, 448 F.2d 791, 171 U.S.P.Q. 294 (C.C.P.A. 1971); *In re Warner*, 379 F.2d 1011, 154 U.S.P.Q. 173 (C.C.P.A. 1967), *cert. denied*, 389 U.S. 1057 (1968).

² M.P.E.P. §2142.

³ M.P.E.P. §2142. This may be in the form of additional evidence, e.g., test data showing the claimed invention possesses improved properties not expected by the prior art. M.P.E.P. §2142.

⁴ M.P.E.P. §2143.03. See *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974); *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970) (must consider all of the claim language).

⁵ M.P.E.P. §2143.03. See *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988).

With respect to claim 3, the Examiner has taken the position that: "Morton et al. teach in Figure 3 a vane structure (301) upstream of said discharge region (112).

Even assuming that the Examiner's position is correct that the vane structure of Morton is the claimed vain structure "for normalizing gas velocity upstream of said discharge system," which applicants do not concede, claim 3 is at least allowable as depending from allowable claim 1.

For the above stated reasons the Examiner's rejection of claim 3 is improper and applicants respectfully request that the Examiner withdraw the rejection of claim 3 and allow claim 3.

With respect to claims 5 and 14, the Examiner has taken the position that: Morton, et al. teach in column 5, lines 1-3 that said heat exchanger is water-cooled. Since water is a known coolant in the art, it would have been obvious to one of ordinary skill in the art to apply this technique to other components of the system."

Even assuming that the Examiner's position is supported by the record under *Lee* and/or *Title* and like cases, which applicants do not concede, since it does not necessarily follow from the teaching of the cooling of one component in a system that another or others should also be cooled (water cooled or not), claims 5 and 14 are at least allowable as depending directly or indirectly from the allowable claim 1.

For the above stated reasons the Examiner's rejection of claims 5 and 14 is improper and applicants respectfully request that the Examiner withdraw the rejection of claims 5 and 14 and allow claims 5 and 14.

With respect to claim 10, the Examiner has taken the position that: "Morton et al teach in column 5, lines 1-3 that the heat exchanger (154) has radial fins and is water-cooled. Claim 10 should be allowed as depending from allowable claim 1.

For the above stated reasons the Examiner's rejection of claim 10 is improper and applicants respectfully request that the Examiner withdraw the rejection of claim 10 and allow claim 10.

With respect to claim 11 the Examiner has taken the position that "this is a duplication of parts for a more efficient cooling system."

Even assuming that the Examiner's position is supported by the record under *Lee* and/or *Title* and like cases, which applicants do not concede, since it does not necessarily

follow from the teaching of the use of one heat exchanger that more than one is obvious, claim 11 is at least allowable as depending from the allowable claim 1.

For the above stated reasons the Examiner's rejection of claim 11 is improper and applicants respectfully request that the Examiner withdraw the rejection of claim 11 and allow claim 11.

With respect to claims 12 and 13, the Examiner has taken the position that "determining the precise configuration of the heat exchanger system involves routine skill in the art for optimizing the cooling of a laser."

Even assuming that the Examiner's position is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claims 12 and 13 are at least allowable as depending indirectly from allowable claim 1.

For the above stated reasons the Examiner's rejection of claims 12 and 13 is improper and applicants respectfully request that the Examiner withdraw the rejection of claims 12 and 13 and allow claims 12 and 13.

With respect to claims 15 and 16, the Examiner has taken the position that "it is inherent that a gas discharge laser will have a high voltage source to provide enough power and that it will be grounded. See discussion on Claim 14."

Even assuming that the Examiner's position is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claims 15 and 16 are at least allowable as depending indirectly from allowable claim 1. In addition there is no *prima facie* case of obviousness even with the examiners assumption of the inherent teaching of the art, since the claim recitation is not simply "grounded" but that the "high voltage is isolated from ground by an inductor."

For the above stated reasons the Examiner's rejection of claims 15 and 16 is improper and applicants respectfully request that the Examiner withdraw the rejection of claims 15 and 16 and allow claims 15 and 16.

With respect to claims 17-20, the Examiner has taken the position that "resonant charging systems are known in the laser art to provide continuous pulses to the discharge electrodes. Bleed circuits and De-Qing circuits are common components."

Even assuming that the Examiner's position is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claims 17-20 are at least allowable as depending directly or indirectly from allowable claim 1.

For the above stated reasons the Examiner's rejection of claims 17-20 is improper and applicants respectfully request that the Examiner withdraw the rejection of claims 17-20 and allow claims 17-20.

With respect to claim 21, the Examiner has taken the position that "it is inherent that pulse power systems comprise a charging system an power supplies."

Even assuming that the Examiner's position is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claim 21 is at least allowable as depending from allowable claim 1.

For the above stated reasons the Examiner's rejection of claim 21 is improper and applicants respectfully request that the Examiner withdraw the rejection of claim 21 and allow claim 21.

With respect to claims 22-26, the Examiner has taken the position that: "Borneis teach in column 7, lines 12-35 the beam measurement and control system which comprises an etalon and an energy monitor. The information, once detected, is sent to the processor (16) for analysis. The function of this system is the same as that of the claimed invention and produces the same result."

Even assuming that the Examiner's position is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claims 22-26 are least allowable as depending from allowable claim 1. In addition there is no *prima facie* case for obviousness as to claim 22, since Borneis does not disclose details of the system of Borneis, including, at least the claimed "photo diode array" and "programmable logic device."

For the above stated reasons the Examiner's rejection of claims 22-26 is improper and applicants respectfully request that the Examiner withdraw the rejection of claims 22-26 and allow claims 22-26.

With respect to claim 27, the Examiner has taken the position that: "Borneis et al teach in columns 5-6 a line narrowing module (10) comprising a tuning mirror. PZTs are known in the art to adjust optical elements for tuning."

Even assuming that the Examiner's position is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claim 27 is at least allowable as depending from allowable claim 1.

For the above stated reasons the Examiner's rejection of claim 27 is improper and applicants respectfully request that the Examiner withdraw the rejection of claim 27 and allow claim 27.

With respect to claim 28, the Examiner has taken the position that: "stepper motors are known in the art to adjust optical elements for tuning."

Even assuming that the Examiner's position is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claim 28 is at least allowable as depending indirectly from allowable claim 1.

For the above stated reasons the Examiner's rejection of claim 28 is improper and applicants respectfully request that the Examiner withdraw the rejection of claim 28 and allow claim 28.

With respect to claim 29, the Examiner has taken the position that: "Borneis et al. teach pretuning means within said line narrowing unit."

Even assuming that the Examiner's position is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claim 29 is at least allowable as depending indirectly from allowable claim 1. Moreover, in fact, without specific citation to a portion of Borneis, Applicants do not see that Borneis teaches the claimed pretuning means, leaving a lack of a *prima facie* case for obviousness.

For the above stated reasons the Examiner's rejection of claim 29 is improper and applicants respectfully request that the Examiner withdraw the rejection of claim 29 and allow claim 29.

With respect to claims 30 and 31, the Examiner has taken the position that: "the diagnostic module is the active tuning means with algorithms to determine the necessary adjustments."

Even assuming that the Examiner's position is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claims 30 and 31 are at least allowable as depending indirectly from allowable claim 1. Moreover, in fact, without specific citation to a portion of Borneis, applicants do not see that Borneis teaches the claimed "active

pretuning means” nor that it includes “a learning algorithm,” resulting in a lack of a *prima facie* case for obviousness.

For the above stated reasons the Examiner’s rejection of claims 30 and 31 is improper and applicants respectfully request that the Examiner withdraw the rejection of claims 30 and 31 and allow claims 30 and 31.

With respect to claim 41, the Examiner has taken the position that: “Borneis et al. teach in Figure 1 a first beam splitter (22) and further teaches in column 7, lines 8-10 that a second beam splitter may be used to direct the other input beam to various detectors.”

Even assuming that the Examiner’s position is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claim 41 is at least allowable as depending indirectly from allowable claim 1. Moreover Borneis does not teach or suggest the recited “means isolating ...,” resulting in a lack of a *prima facie* case for obviousness.

For the above stated reasons the Examiner’s rejection of claim 41 is improper and applicants respectfully request that the Examiner withdraw the rejection of claim 41 and allow claim 41.

Claims 4 and 6-8 stand rejected under 35 U.S.C. §103 (a) as being unpatentable over Morton in view of Borneis and further in view of United States Patent No. 5,848,089, entitled EXCIMER LASER WITH MAGNETIC BEARINGS SUPPORTING FAN, issued to Sarkar, et al. on December 8, 1998 (“Sarkar”)

With respect to claims 4 and 6-8 the examine has taken the position that:

Sarkar et al. teach in Figure 5 a fan for a gas discharge laser comprising a shaft (130) driven by a brushless DC motor. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the fan structure of Morton et al., as taught by Sarkar et al., to have a more powerful fan motor to increase the pulse repetition rate. (See Sarkar et al. column 2, lines 6-13).

Claims 4 and 6 are allowable as depending from the allowable claim 1.

Even assuming that the Examiner’s position with respect to claim 8 is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claim 8 is at least allowable as depending indirectly from allowable claim 1.

For the above stated reasons the Examiner's rejection of claims 4 and 6-8 is improper and applicants respectfully request that the Examiner withdraw the rejection of claims 4 and 6-8 and allow claims 4 and 6-8.

Claims 32-36, 42 and 43 have been rejected as unpatentable under 35 U.S.C. §103 (a) over Morton, in view of Borneis and further in view of United States Patent No. 6,529,533, entitled BEAM PARAMETER MONITORING UNIT FOR A MOLECULAR FLUORINE (F₂) LASER, issued to Voss on March 4, 2003 ("Voss").

With respect to claims 32-36, 42 and 43 the Examiner has taken the position that "Voss teaches in column 3, lines 45-50 purging to cleanse the system. It would have been obvious to one of ordinary skill in the art at the time of the invention to use purging means in Morton et al. as taught by Voss, to keep the beam path relatively free of water and oxygen, which absorb the beam. (See Voss column 1, lines 55-65)."

Even assuming that the Examiner's position with respect to claims 32-36, 42 and 43 is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claims 32-36, 42 and 43 are at least allowable as depending indirectly from allowable claim 1.

For the above stated reasons the Examiner's rejection of claims 32-36, 42 and 43 is improper and applicants respectfully request that the Examiner withdraw the rejection of claims 32-36, 42 and 43 and allow claims 32-36, 42 and 43.

Claim 37 stands rejected as unpatentable under 37 U.S.C. §103 (a) over Morton, in view of Boreis and in view of United States Patent No. 6,493,364, entitled BEAM SHUTTER FOR EXCIMER LASER, issued to Baulmer, et al. on December 10, 2002 ("Baulmer").

The Examiner has taken the position that "Baulmer et al. teach in claim 10 an excimer laser comprising a beam shutter and a power meter. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the beam shutter and power meter in Morton et al, as taught by Baulmer et al., because it is light tight and has a high power handling capability."

Even assuming that the Examiner's position with respect to claim 37 is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claim 37 is at least allowable as depending indirectly from allowable claim 1.

For the above stated reasons the Examiner's rejection of claims 37 is improper and

applicants respectfully request that the Examiner withdraw the rejection of claim 37 and allow claim 37.

Claims 38-40 stand rejected as unpatentable under 35 U.S.C. §103 (a) over Morton, in view of Borneis and further in view of United States Patent No. 6,219,368, entitled BEAM DELIVERY SYSTEM FOR MOLECULAR FLUORINE (F₂) LASER, issued to Govorkov on April 17, 2001 ("Govorkov").

The Examiner has taken the position that "Govorkov teaches in Figure 2 a beam sealing system comprising bellows (8) at opposite ends of the resonant cavity between the discharge tube/chamber and the end windows/optics. It would have been obvious to one of ordinary skill in the art at the time of the invention to use the beam sealing system in Morton et al., as taught by Govorkov, to purify the laser tube."

Even assuming that the Examiner's position with respect to claims 38-40 is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, claims 38-40 are at least allowable as depending indirectly from allowable claim 1.

In addition there is no *prima facie* case of obviousness since the combination does not contain, at least, a "line narrowing unit."

For the above stated reasons the Examiner's rejection of claims 38-40 is improper and applicants respectfully request that the Examiner withdraw the rejection of claims 38-40 and allow claims 38-40.

Claim 9 stands rejected as unpatentable under 35 U.S.C. §103 (a) over Morton, in view of Borneis and further in view of Sarkar, and further in view of United States Patent No. 6,404,158, entitled COLLISION MONITORING SYSTEM, issued to Boisvert, et al. on June 11, 2002 ("Boisvert")

The Examiner has taken the position that "Boisvert et al. teach in column 3, lines 20-25 sensorless motors for a drive motor. Even though this art is different, it is addressing the same problem ... alignment of motor shafts. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the sensorless motors in Morton et al., as taught by Boisvert et al., to improve position and accuracy."

Even assuming that the Examiner's position with respect to claim 9 is supported by the record, as required by *Lee* and *Title* and like cases, which applicants do not concede, especially since Boisvert, contrary to the examiner's contention, discloses the use of

sensorless motors in the particularly application to which Boisvert applies such motors, as “a more reliable means for hard and/or soft obstacle detection,” (Col. 3, lines 18-19) claim 9 is at least allowable as depending indirectly from allowable claim 1.

For the above stated reasons the Examiner’s rejection of claim 9 is improper and applicants respectfully request that the Examiner withdraw the rejection of claim 9 and allow claim 9.

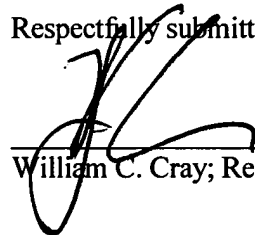
In addition to the above reasons for traversing the Examiner’s rejections of the claims under 35 U.S.C. §103 (a) applicants assert that the Examiner’s picking and choosing of elements of various references, particularly three or more references, fails to provide the requisite motivation or suggestion to combine from the references themselves or undeniably well known engineering truths as required by *Lee* and *Title* and like cases. The Examiner’s identification of motivations to combine that are but a reflection of the motivation taught in the above captioned application or no more than a general motivation of making something better, are similarly improper under *Lee* and *Title* and like cases.

Conclusion

For the above stated reasons the Examiner's rejections of claims 1-43 are not proper and the Examiner is respectfully requested to withdraw the rejections of claims 1-43 and allow claims 1-43.

No fee is believed to be due in connection with the filing of this paper. If any fee is required by the filing of this paper, The Commissioner is hereby authorized to charge any fees, or to credit any overpayment to Deposit Account No. 03-4060.

Respectfully submitted,



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